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July 1989

Illustrated Key to the Genera of Free-Living Marine Nematodes of the Order Enoplida

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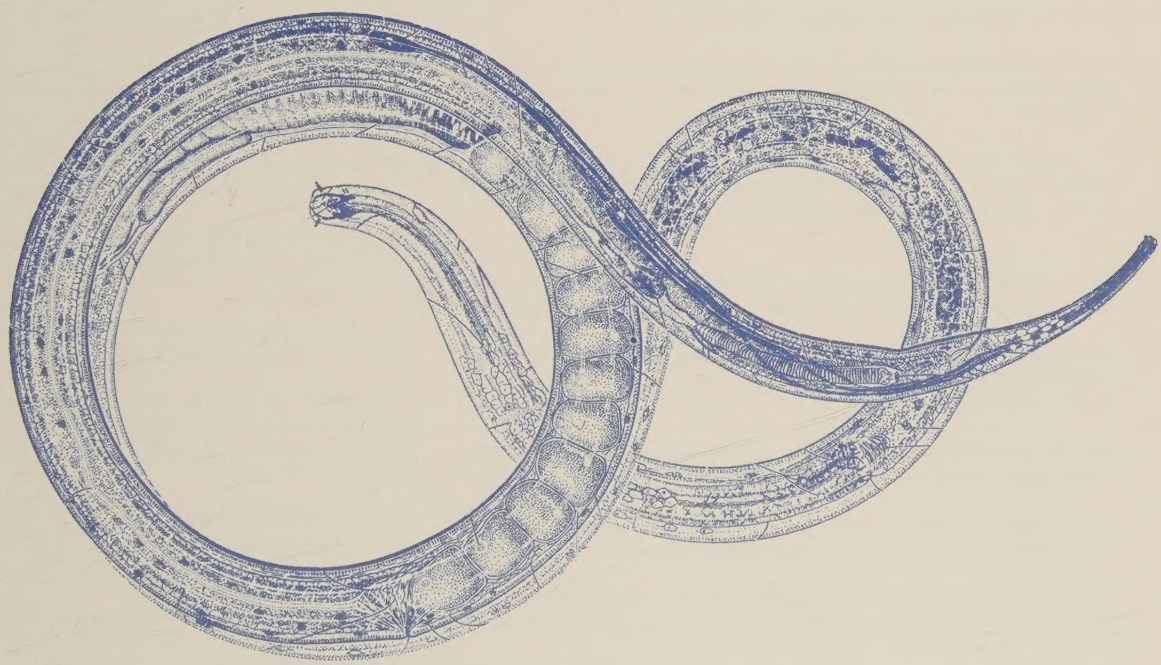

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CONTENTS

Introduction **1**

Acknowledgments **2**

Citations **2**

Use of the key **2**

Flow chart of taxa included in key **3**

Key to genera of the Enoplida **6**

Illustration sources **24**

References for illustration sources **25**

COVER: Drawing of *Metoncholaimus pristiurus* by N.A. Cobb, J. Wash. Acad. Sci. 22(12):346.

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Illustrated Key to the Genera of Free-Living Marine Nematodes of the Order Enoplida[1]

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Abstract

A pictorial key to 118 genera of free-living marine nematodes in the order Enoplida is presented. Specific morphological and anatomical features are illustrated to facilitate use of the key. The purpose of this work is to provide a single key to the genera of enoplid nematodes to facilitate identification of these organisms by nematologists and marine biologists working with meiofauna.

Introduction

Free-living marine nematodes are a significant component of estuarine and marine benthic communities and are considered a part of the meiofauna. Nematodes are often the most numerically abundant organisms in estuarine and marine sediments, and their species diversity within a given estuarine or marine benthic habitat is usually quite large. Free-living marine nematodes recently have been examined as possible indicators of pollution in estuarine and marine environments. In North America, studies to determine the ecological role of nematodes and their response to pollution have been difficult. This is due to the instability of the taxonomy of these organisms and the absence of keys to several of the genera within each order.

Hope and Murphy (1972), Gerlach and Riemann (1974), Andrássy (1976), Lorenzen (1981), and Inglis (1983) have published classifications of free-living marine nematodes. Major differences exist between these classifications which can lead to confusion in the identification of these animals. Much of the morphology of free-living marine nematodes is not well understood. As a result, homologous structures are difficult to identify. Existing classifications and keys to the taxa of free-living marine nematodes reflect these difficulties.

The systematics and general ecology of the free-living marine nematodes have been summarized by Heip et al. (1982, 1985). Tarjan (1980) provided an illustrated key to a large number of the genera of free-living marine nematodes in each order with numerous drawings of representative species of these genera. Platt and Warwick (1983) developed a pictorial key to the genera of free-living marine nematodes and provided drawings and descriptions of the species of Enoplida found in British waters. The use of these keys can provide a sound basis for the identification of the genera of marine nematodes. However, some of the genera of enoplid nematodes are absent from both keys.

It was decided that the key provided by Tarjan (1980) should be expanded to include the most commonly accepted genera of the Enoplida. The goal was not to present a new classification of the Enoplida but to provide a means of identification of the genera included in the key. The original key of Tarjan (1980) was based on the classification given by Andrássy (1976). The key presented herein is a compilation of the published literature and relies heavily on classifications of the Enoplida given by Andrássy (1976) and Gerlach and Riemann (1974). This key is not intended to reflect phylogenetic relationships. The key includes the Tripyloidina in the Enoplida simply so that those free-living marine nematodes with segmented cephalic setae are all in one place. Gerlach and Riemann (1974) placed them in the Enoplida but Andrássy (1976) did not. The genus *Polygastrophora* De Man, 1922 was removed from the Enchelidiidae and placed with the Belbollidae for ease of identification because both genera, *Polygastrophora* and *Bolbellia* (Cobb 1920) Gerlach and Riemann 1974, possess a multibulbar esophagus, and some species, such as *Polygastrophora edax* Wieser

[1]Florida Agricultural Experiment Station Journal Series No. 8673.

and Hopper, 1967, do not have sexual dimorphism in the stoma.

The key presented herein includes 118 genera of the Enoplida and follows the pattern given in Tarjan (1980). The decision as to which genera should be included in the key was difficult and in some cases arbitrary. However, an attempt was made to include those genera which have been reported primarily from estuarine and marine environments rather than primarily from freshwater, those that contain more than one species, and those that have been collected by the authors. This key includes about 70% of the genera listed for the Enoplida, and the genera included account for about 90% of the known species of free-living marine enoplids. Platt and Warwick (1983) provide a brief and concise discussion of the morphology of free-living marine nematodes and enoplids that may be consulted as an aid to using this key.

A key such as this inevitably perpetuates errors, misinterpretations, and inadequate descriptions of taxa that exist in the literature. Accordingly, it is hoped that the present work will stimulate others to correct such errors where they exist and refine the definition of taxa where necessary.

Acknowledgments

We express our sincere appreciation to those persons who reviewed the key and provided many helpful suggestions. Comments and recommendations were received from Dr. István Andrássy, Eotvos Lorand University, Hungary; Dr. W. Duane Hope, U.S. National Museum of Natural History; Dr. Preben Jensen, Denmark; and Dr. Howard Platt, British Museum (Natural History).

We are grateful to Lisa A. Hoover who devoted much time to testing the key using specimens of marine nematodes collected by her and the senior author. Her efforts resulted in clarification of several potential problem areas.

Citations

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1981 Entwurf eines phylogenetischen systems der freilebenden Nematoden. Veröff. Inst. Meeresforsch. Bremerhaven, Suppl. 7, p. 1-472.

Platt, H.M., and R.M. Warwick
1983 Free-living marine nematodes. Part 1. British Enoplids. Cambridge Univ. Press, Cambridge, 307 p.

Tarjan, A.C.
1980 An illustrated guide to the marine nematodes. Inst. Food Agric. Sci., Univ. Florida, Gainesville, 135 p.

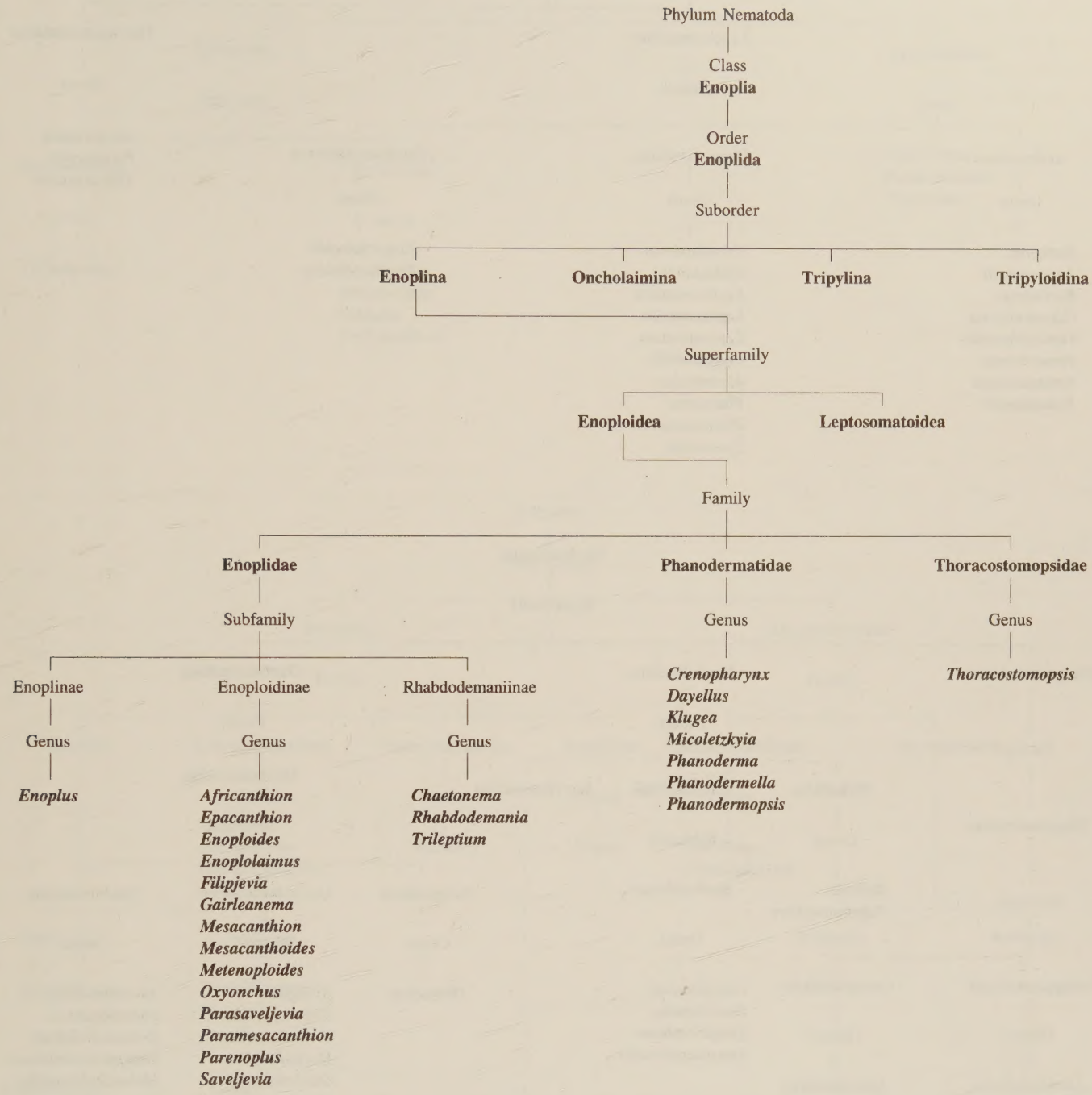
Use of the key

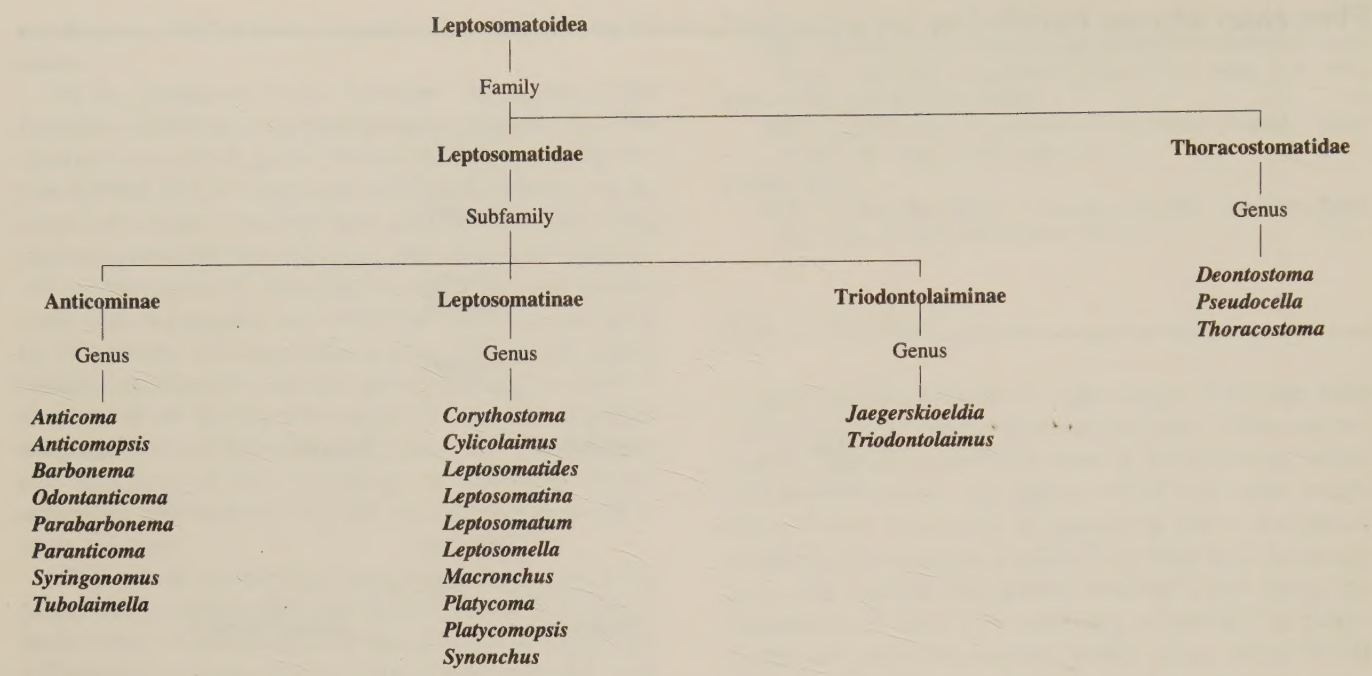
Couplet numbers down the far-right margin of the page refer to the location of related lower-ranked taxa. When one arrives at a family or subfamily name on the right side, rather than another couplet, the genera within that taxon immediately follow in couplets designated by lower-case letters on the left. For example, couplet 5(4)B ends with the family Thoracostomatidae. The genera included in that family are in couplets "a" and "b" immediately following. The parenthetical portion of the couplet number [e.g., (4) in 5(4)B] indicates the referent couplet, allowing one to work backward, as well as forward, through the key. Numbers in parentheses within the descriptions refer to figures.

The following explanations of terms are provided to aid in avoiding confusion, particularly at the beginning of the key. The term **stoma** is used throughout to designate modification of the anterior end for feeding. Stoma refers to both the mouth opening that is present in all nematodes and the buccal cavity which can be well developed or greatly reduced. The **esophagus** of marine nematodes is, in general, either muscular (outer border smooth and few nuclei and vesicles visible within esophageal tissue) or vesiculate-cellulate (outer border lobed or irregular and many nuclei and vesicles visible). In some taxa such as the Phanodermatidae, the anterior portion of the esophagus is muscular and the posterior part that comprises most of the esophagus is vesiculate-cellulate. These taxa are considered to have a vesiculate-cellulate esophagus. The anterior portion of the esophagus in some free-living marine nematodes surrounds the stoma and attaches to the cuticle to form a **cephalic capsule**. The thickness of the cephalic capsule and the extent of contact with the cuticle varies. It is imperative to use the illustrations cited in the couplets in deciding which statements are appropriate.

Illustrations used in the key were redrawn from published references or are original drawings by the senior author. In some cases, portions of the anatomy shown on the drawings are labelled or emphasized with ink; others have been deleted to better portray the structures of interest. Credit is given for each illustration used. Since this key is proposed for nonprofit educational purposes, it is not considered to be an infringement of the United States Revised Copywrite Law.

Flow chart of taxa included in key




Leptosomatoidea
Family
Leptosomatidae
Subfamily
Anticominae
Genus
Anticoma
Anticomopsis
Barbonema
Odontanticoma
Parabarbonema
Paranticoma
Syringonomus
Tubolaimella
Leptosomatinae
Genus
Corythostoma
Cylicolaimus
Leptosomatides
Leptosomatina
Leptosomatum
Leptosomella
Macronchus
Platycoma
Platycomopsis
Synonchus
Triodontolaiminae
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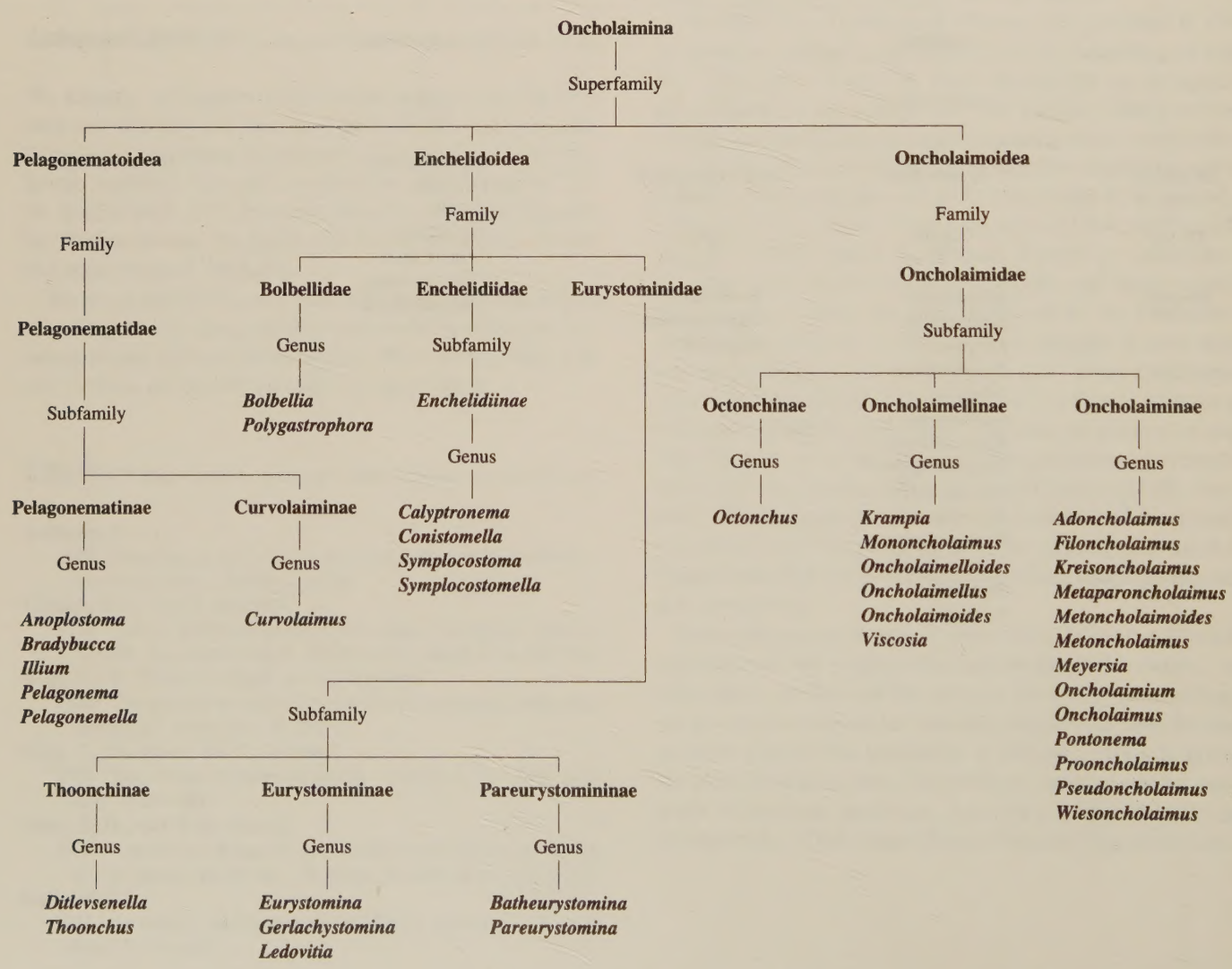
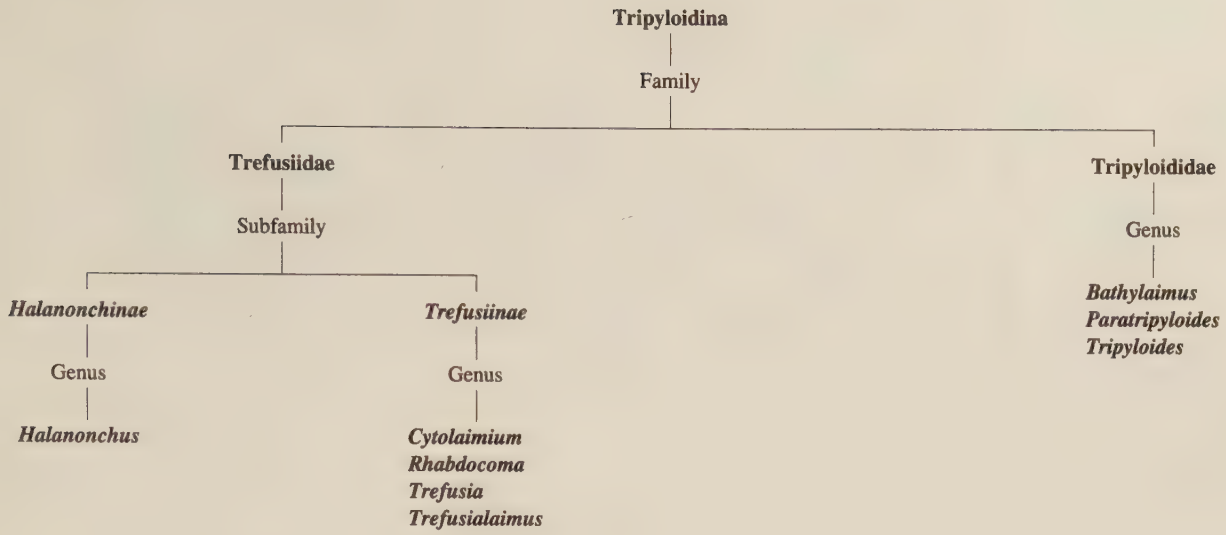
Jaegerskioeldia
Triodontolaimus
Thoracostomatidae
Genus
Deontostoma
Pseudocella
Thoracostoma


Oncholaimina
Superfamily
Pelagonematoidea
Family
Pelagonematidae
Subfamily
Pelagonematinae
Genus
Anoplostoma
Bradybucca
Illium
Pelagonema
Pelagonemella
Curvolaiminae
Genus
Curvolaimus
Enchelidoidea
Family
Bolbellidae
Genus
Bolbellia
Polygastrophora
Enchelidiidae
Subfamily
Enchelidiinae
Genus
Calyptronema
Conistomella
Symplocostoma
Symplocostomella
Eurystominidae
Subfamily
Thoonchinae
Genus
Ditlevsenella
Thoonchus
Eurystomininae
Genus
Eurystomina
Gerlachystomina
Ledovitia
Pareurystomininae
Genus
Batheurystomina
Pareurystomina
Oncholaimoidea
Family
Oncholaimidae
Subfamily
Octonchinae
Genus
Octonchus
Oncholaimellinae
Genus
Krampia
Mononcholaimus
Oncholaimelloides
Oncholaimellus
Oncholaimoides
Viscosia
Oncholaiminae
Genus
Adoncholaimus
Filoncholaimus
Kreisoncholaimus
Metaparoncholaimus
Metoncholaimoides
Metoncholaimus
Meyersia
Oncholaimium
Oncholaimus
Pontonema
Prooncholaimus
Pseudoncholaimus
Wiesoncholaimus


Tripyloidina
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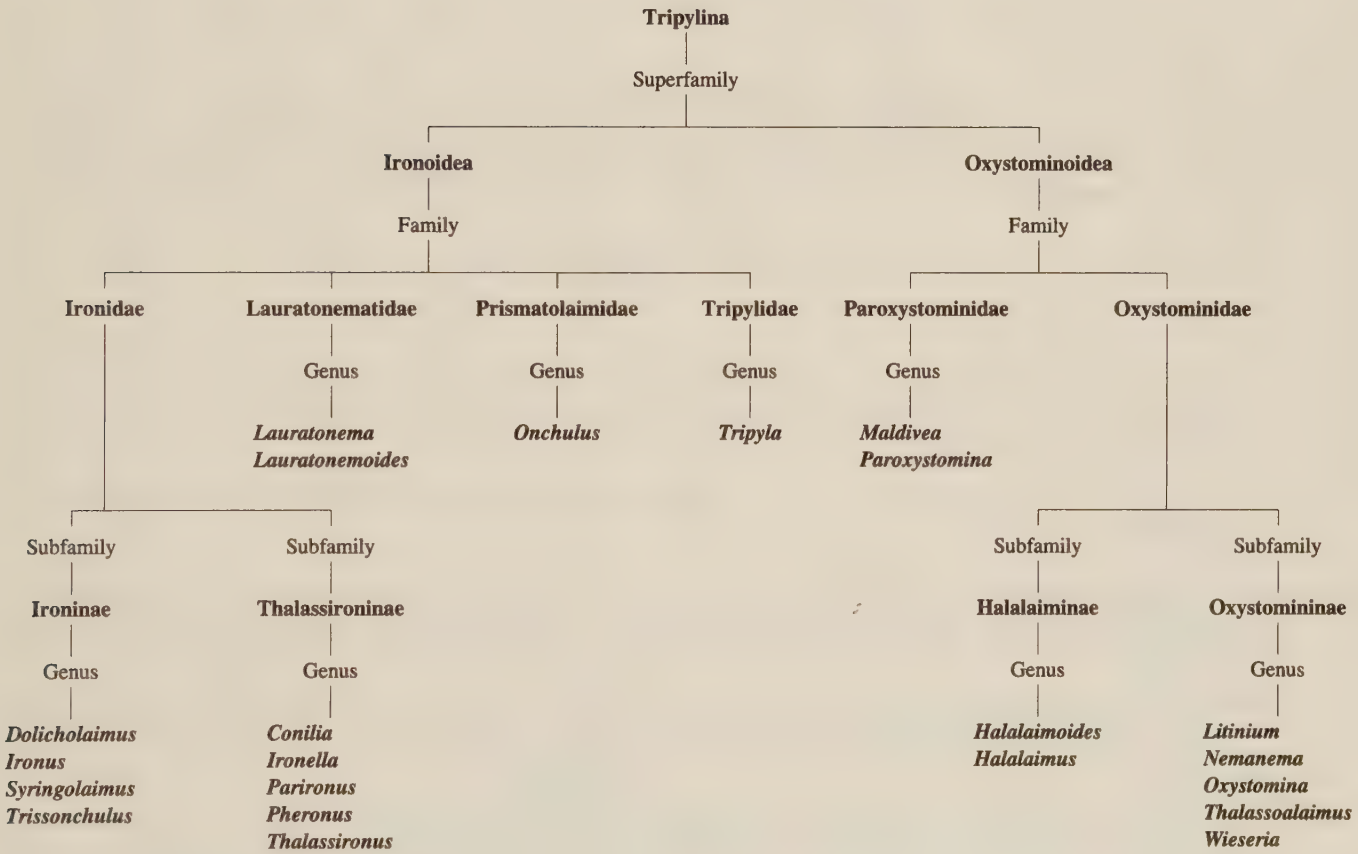
Trefusiidae
Subfamily
Halanonchinae
Genus
Halanonchus
Trefusiinae
Genus
Cytolaimium
Rhabdocoma
Trefusia
Trefusialaimus
Tripyloididae
Genus
Bathylaimus
Paratripyloides
Tripyloides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Family
Ironidae
Subfamily
Ironinae
Genus
Dolicholaimus
Ironus
Syringolaimus
Trissonchulus
Subfamily
Thalassironinae
Genus
Conilia
Ironella
Parironus
Pheronus
Thalassironus
Lauratonematidae
Genus
Lauratonema
Lauratonemoides
Prismatolaimidae
Genus
Onchulus
Tripylidae
Genus
Tripyla
Oxystominoidea
Family
Paroxystominidae
Genus
Maldivea
Paroxystomina
Oxystominidae
Subfamily
Halalaiminae
Genus
Halalaimoides
Halalaimus
Subfamily
Oxystomininae
Genus
Litinium
Nemanema
Oxystomina
Thalassoalaimus
Wieseria

Abbreviations used in the key

a	amphid	**d**	denticles	**l**	labia	**s**	spicules
ab	apical band	**ds**	double seta	**lr**	longitudinal rods	**sp**	spear
an	anus	**dt**	dorsal tooth	**ls**	labial seta	**spn**	spinneret
ap	apophysis			**lsv**	left subventral (tooth)	**st**	stoma
		e	esophagus			**str**	striations
b	bar	**ep**	excretory pore	**m**	mandibles	**sup**	supplement
bn	band	**es**	esophageal structure	**ms**	solid mandibles	**svt**	subventral tooth
c	chambers	**g**	gubernaculum	**oc**	ocellus	**t**	tooth
cc	cephalic capsule					**tb**	transverse bar
cl	claw	**h**	heavily cuticularized	**p**	exit pore	**tr**	tropis
cir	circular structure		walls				
cs	cephalic seta			**rb**	refractive body	**v**	vulva
		it	inner thickening	**rsv**	right subventral (tooth)		
						w	walls

Key to genera of the Enoplida

Enoplida Filipjev, 1929

The genera in this key includes free-living marine nematodes with the following characteristics: Amphid variable, consisting of slit-like opening and subcuticular pouch, may be enlarged, rounded, longitudinally oval or unispiral (Figs. 1,2,5,67,114); integument smooth or annulated, rarely ornamented (punctate); lateral fields absent; stoma variable in shape, teeth and denticles sometimes present, mandibles present in some; esophagus cylindrical to clavate, rarely with bulb-like swellings or bulbs.

1 **A** Cephalic setae segmented **(2cs, 118)**. **(Suborder Tripyloidina)** **28**

B Cephalic setae not segmented **(5cs)** **2**

2(1) **A** Esophagus only enveloping posterior end of stoma **(1e)**; stoma spacious **(1st)**; barrel-shaped with heavily cuticularized walls **(1w)** with or without teeth **(1t)** and/or denticles; males of some genera with reduced stoma **(76).** **(Suborder Oncholaimina)** **19**

B Esophagus extending anteriorly to, or close to, lip region **(2e)**; stoma narrow or large, with weakly cuticularized walls **(2st, 5w)** **3**

3(2) **A** Esophagus extending to lip region where it is attached to integument forming a cephalic capsule **(3e, 6cc, 7cc)**; precloacal supplements, when present, often cuticularized, tubular **(4sup)**; amphids pocket-shaped **(12a)**. **(Suborder Enoplina)** **4**

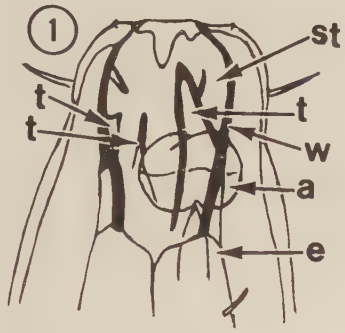
B Esophagus extending to, or close to, lip region but not attached to integument **(2e)**; precloacal supplements papilloid or setose; amphids of variable shape. **(Suborder Tripylina)** **12**

4(3) **A** Structure of esophagus muscular **(2e)**, not vesiculate-cellulate **(3es)**; stoma simple; teeth, if present, generally of unequal size; mandibles **(40m)** absent. **(Superfamily Leptosomatoidea)** **5**

B Esophagus with irregular outline and generally of vesiculate-cellulate structure; stoma generally with three teeth of about equal size; mandibles present or absent **(28m, 34m)**. **(Superfamily Enoploidea)** **8**

5(4) **A** Cephalic capsule inconspicuous with unmarked, weakly-lobed posterior margins. **(Family Leptosomatidae)** **6**

B Cephalic capsule displaying conspicuous spots and indentations with strongly-lobed posterior margins **(6cc)** ..... **Thoracostomatidae**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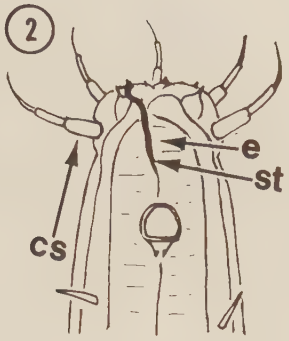
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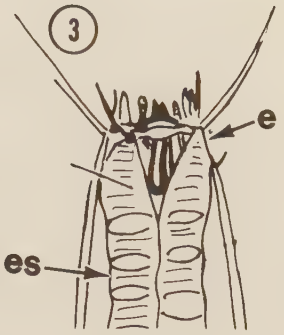
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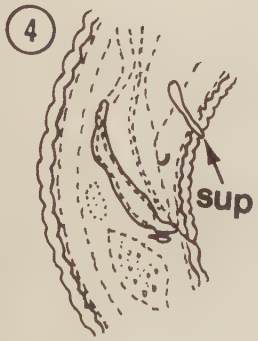
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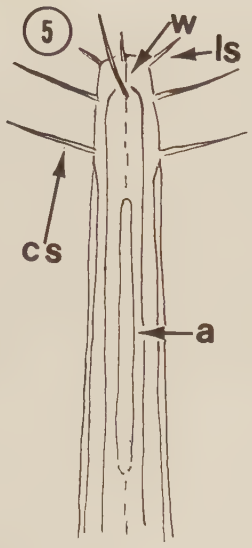
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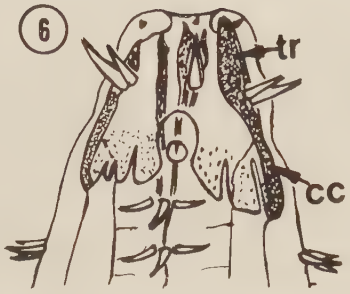
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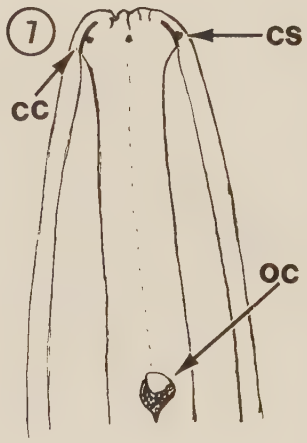
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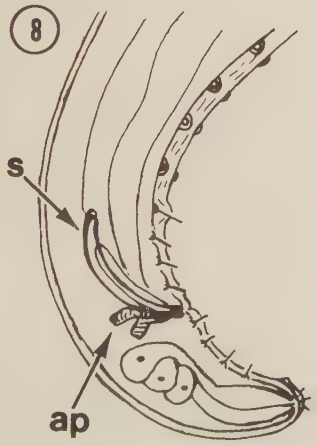
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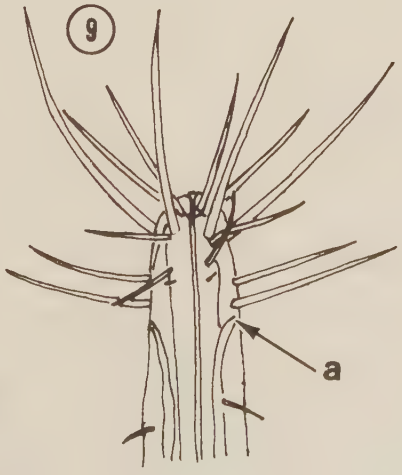
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a Ocelli with lens present (7oc); caudal glands extending anterior to anus ..... b
Ocelli without lens; caudal glands confined to tail ..... *Pseudocella* Filipjev, 1927

b(a) Tooth-like structure (tropis) present on ventral side of cephalic capsule (6tr) ..... *Thoracostoma* Marion, 1870
Tooth-like structure (tropis) absent ..... *Deontostoma* Filipjev, 1916

6(5) A Cephalic capsule without noticeable inner thickening (12); teeth small if present (15t) ..... Anticominae

a Cephalic setae about three head diameters long ..... b
Cephalic setae not more than one head diameter long ..... d

b(a) Stoma small, simple c
Stoma well developed ..... *Tubolaimella* Cobb, 1933

c(b) Amphids posterior to longest postcephalic setae (9a); precloacal supplement absent ..... *Barbonema* Filipjev, 1927
Amphids anterior to longest postcephalic setae; precloacal supplement present (10sup) ..... *Parabarbonema* Inglis, 1964

d(a) Gubernaculum present ..... e
Gubernaculum absent (11) ..... *Anticomopsis* Micoletzky and Kreis, 1930

e(d) Excretory pore situated on cuticular projection (12) ..... *Paranticoma* Micoletzky and Kreis, 1930
Excretory pore normal, not on cuticular projection ..... f

f(e) Tubular precloacal supplement present or absent; setiform, subventral, precloacal supplements absent; gubernaculum well developed (13) ..... g
Tubular precloacal supplement absent; setiform, subventral supplements present; gubernaculum small, simple (14g) ..... *Syringonomous* Hope and Murphy, 1969

g(f) Stoma well developed with distinct, small teeth (15t) ..... *Odontanticoma* Platonova, 1976
Stoma reduced, teeth absent ..... *Anticoma* Bastian, 1865

B Cephalic capsule with noticable inner thickening (16it); teeth present or absent 7

7(6) A Stoma with three equally long mandibular teeth (17t) ..... Triodontolaiminae

a Tail filiform with acute tip ..... *Triodontolaimus* De Man, 1893
Tail short with clavate tip ..... *Jaegerskioeldia* Filipjev, 1916

B Stoma with or without small teeth, of equal length if more than one ..... Leptosomatinae

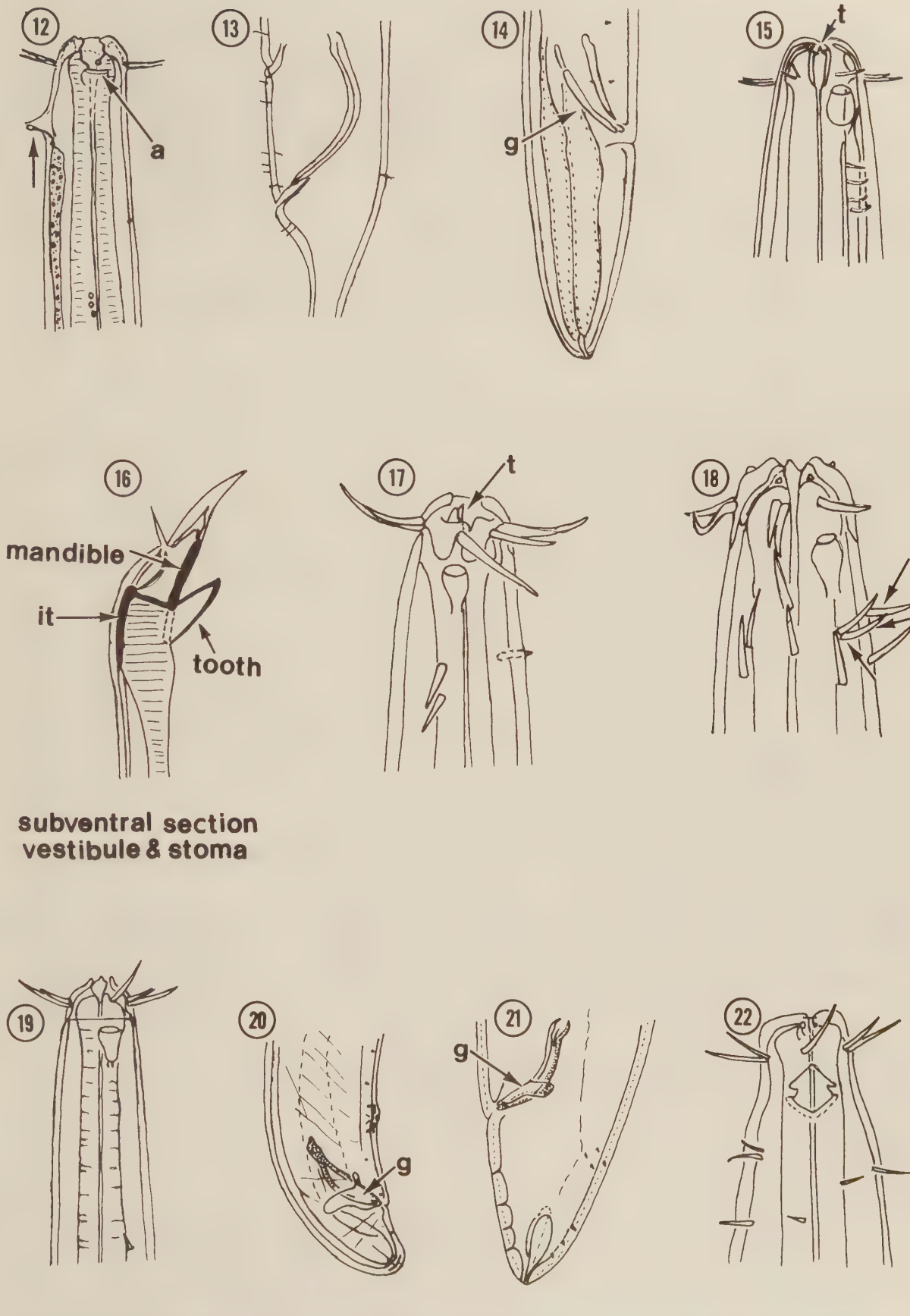
a Stoma with no more than one small tooth ..... b
Stoma with several teeth, plates, or dentated ribs ..... f

b(a) Cervical setae present in two to three circles (18) ..... *Platycomopsis* Ditlevsen, 1926
Cervical setae absent c

c(b) Tail clavate ..... *Leptosomella* Filipjev, 1927
Tail cylindrical or conical, rounded or acute tip ..... d

d(c) Cephalic sensillae papillose (7cs); ocelli present ..... e
Cephalic sensillae setose, well developed (19); ocelli absent ..... *Leptosomatina* Allgén, 1951

e(d) Precloacal supplement present; gubernaculum large, with anteriorly directed projections (20g); sexual dimorphism in amphids absent ..... *Leptosomatides* Filipjev, 1918
Precloacal supplement reduced or absent; gubernaculum small, without anteriorly directed projections (21g); sexual dimorphism in amphids present ..... *Leptosomatum* Bastian, 1865



subventral section
vestibule & stoma

f(a) Two flat setae situated near each amphid (22) ..... *Platycoma* Cobb, 1894

Amphids not accompanied by two flat setae ..... g

g(f) Stoma large, with apical dentated band (23ab) ..... *Cylicolaimus* De Man, 1889

Stoma narrow (24st), with plates ..... h

h(g) Three large teeth present in addition to small teeth on plates (24t); gubernaculum large with dentate distal ends; precloacal region with long, stout ventrolateral setae in rows ..... *Macronchus* Inglis, 1964

Three large teeth absent, small teeth present; gubernaculum small, without dentate distal ends; stout precloacal setae absent i

i(h) Gubernaculum with two large apophyses (25ap) ..... *Corythostoma* Hope and Murphy, 1972

Gubernaculum without two large apophyses (26g) ..... *Synonchus* Cobb, 1894

8(4) A Stoma with a long, sharply pointed spear (27sp). (Family Thoracostomopsidae) ..... *Thoracostomopsis* Ditlevsen, 1918

B Spear absent 9

9(8) A Stoma with three mandibles (28m). (Family Enoplidae) 10

B Stoma without three mandibles ..... Phanodermatidae

a Cephalic capsule trilobed (29cc) ..... b

Cephalic capsule not trilobed ..... f

b(a) Cephalic capsule strongly developed, with or without striations (30cc) c

Cephalic capsule weakly developed ..... d

c(b) Gubernaculum with dorsal apophysis (31ap) ..... *Dayellus* Inglis, 1964

Gubernaculum without dorsal apophysis ..... *Phanoderma* Bastian, 1865

aa Ocelli present ..... *Phanoderma* Bastian, 1865

Ocelli absent ..... *Alyncoides* Wieser, 1953

d(b) Cephalic capsule with three movable, labial lobes; labial papillae prominent; spicules elongate; precloacal supplement present (32) ..... *Klugea* Filipjev, 1927

aa Ocelli present ..... *Nasinema* Filipjev, 1927

Ocelli absent ..... *Klugea* Filipjev, 1927

Cephalic capsule without three movable, labial lobes; labial papillae not prominent; precloacal supplement present or absent ..... e

e(d) Spicules long; tubular precloacal supplement absent ..... *Phanodermopsis* Ditlevsen, 1926

Spicules short; tubular precloacal supplement present (33) ..... *Phanodermella* Kreis, 1928

f(a) Precloacal supplement present in male ..... *Micoletzkyia* Ditlevsen, 1926

Precloacal supplement absent in male ..... *Crenopharynx* Filipjev, 1934

10(9) A Labial setae short, papilliform (28ls), teeth absent. (Subfamily Enoplinae, one genus) ..... *Enoplus* Dujardin, 1845

B Labial setae long, stout, setose (34ls); teeth present (34t) 11

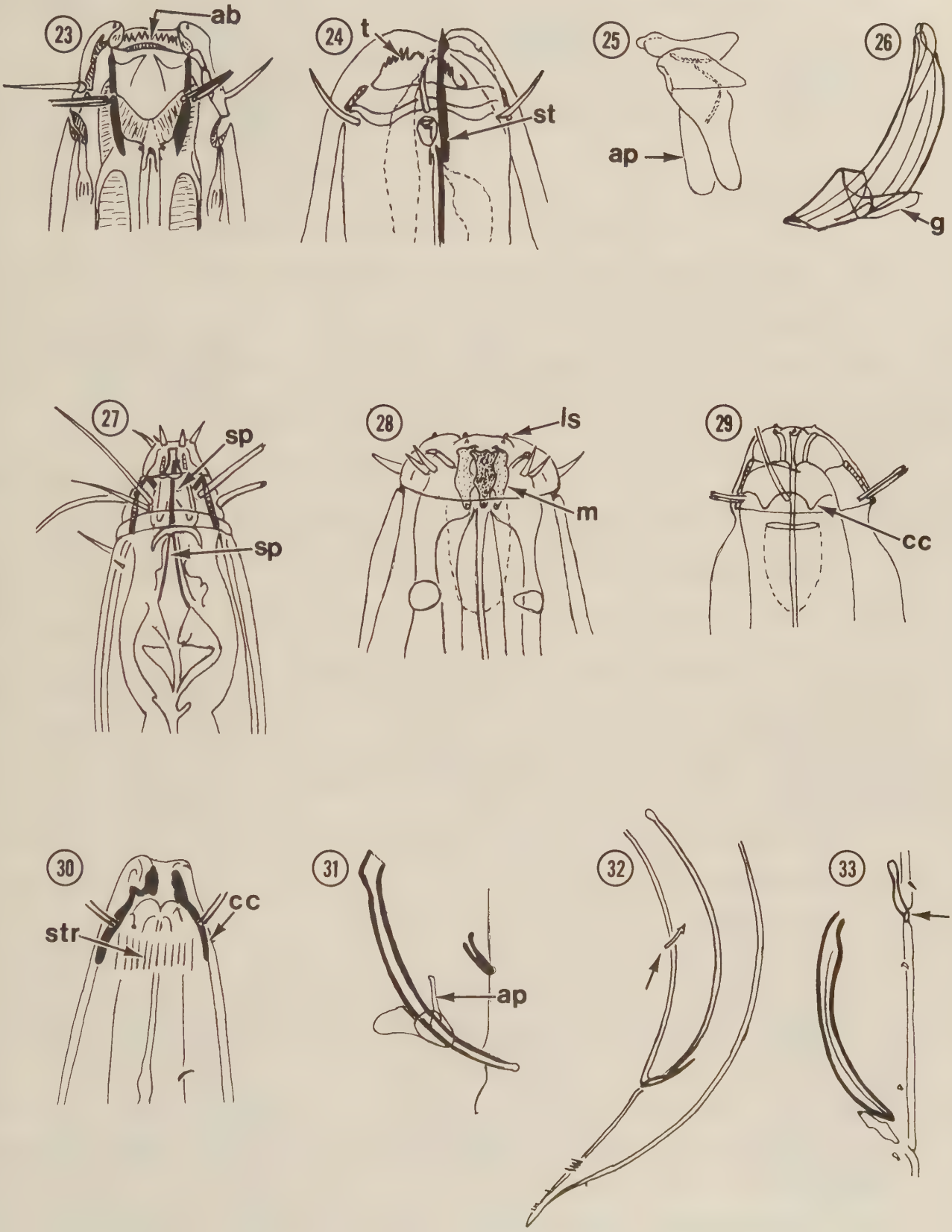
11(10) A Lips relatively raised, conical (34l) ..... Enoploidinae

a Anterior end of subventral teeth long, extending to or beyond anterior end of mandibles (35) ..... b

Anterior end of subventral teeth located far posterior to anterior end of mandibles ..... f

b(a) Anterior end of subventral teeth at level of anterior end of mandibles c

Anterior end of subventral teeth extending beyond anterior end of mandibles ..... d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c(b) Mandibles arch-shaped, posterior apophyses absent **(36)** ..... ***Oxyonchus*** **Filipjev, 1927**

Mandibles not arch-shaped, posterior apophyses present **(37ap)** ..... ***Filipjevia*** **Kreis, 1928**

d(b) Mandibles well developed **(35m)** ..... ***Parasaveljevia*** **Wieser, 1953**

Mandibles reduced or vestigial ..... **e**

e(d) Dorsal tooth reduced **(38dt)**, subventral teeth larger **(38svt)**; labial setae not bulbous ..... ***Saveljevia*** **Filipjev, 1927**

Dorsal tooth not reduced, larger and more cuticularized than subventrals; labial setae bulbous **(39)** ..... ***Gairleanema*** **Warwick and Platt, 1973**

f(a) Teeth reduced, visible only in juveniles; anterior end of mandibles without claws **(40)** ..... ***Parenoplus*** **Filipjev, 1927**

Teeth distinct at all stages **(43t)**; mandibles well developed with claws **(43cl)** ..... **g**

g(f) Mandibles arch-shaped, with two longitudinal rods or plates **(41lr)** connected by anterior bar **(41b)**; if anterior bar missing, rods separated by a narrow space **(42)** ..... **h**

Mandibular rods more solid, not as thin as above **(34m)** ..... **l**

h(g) Cephalic setae originate from base of cephalic capsule **(43cc)** ..... ***Enoplolaimus*** **De Man, 1893**

Cephalic setae originate anterior to base of cephalic capsule **(44)** ..... **i**

i(h) Cephalic setae originate from middle or anterior end of cephalic capsule ..... **j**

Cephalic setae originate anterior to anterior end of cephalic capsule **(45)** ..... ***Paramesacanthion*** **Wieser, 1953**

j(i) Longitudinal elements of mandibles rod-like, transverse anterior bar always present **(41b)** ..... **k**

Longitudinal elements of mandibles plate-like, transverse anterior bar present or absent; if absent, longitudinal elements separated by a narrow space **(42)** ..... ***Epacanthion*** **Wieser, 1953**

k(j) Precloacal supplement absent, in its place a row of short stout setae **(46)** ..... ***Africanthion*** **Inglis, 1964**

Precloacal supplement present or absent; if absent, midventral row of stout setae also absent ..... ***Mesacanthion*** **Filipjev, 1927**

l(g) Lips unstriated **(47)** ..... ***Mesacanthoides*** **Wieser, 1953**

Lips striated **(34str)** ..... **m**

m(l) Mandibles not extremely slender or elongate (ratio length-to-width at middle of shaft <10) ..... ***Enoploides*** **Saveljev, 1912**

Mandibles elongate, slender (ratio length-to-width ≥10) **(48)** ..... ***Metenoploides*** **Wieser, 1953**

B Lips low, flattened **(49l)** ..... **Rhabdodemaniinae**

a Stoma with teeth ..... **b**

Stoma without teeth **(50)** ..... ***Chaetonema*** **Filipjev, 1927**

b(a) Mandibles reduced to three rod-like structures or three paired teeth anteriorly; teeth also present posterior in stoma **(49t)** ..... ***Rhabdodemania*** **Baylis and Daubney, 1926**

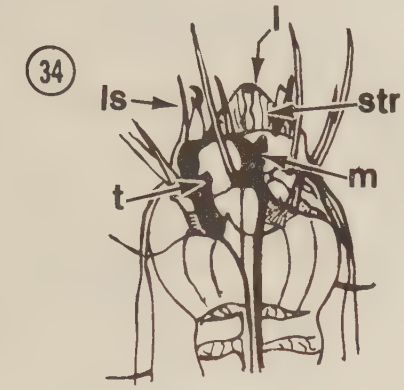
Mandibles with two longitudinal rods **(51lr)** connected by an anterior, transverse bar **(51tb)**; teeth at level of anterior bar **(51t)** ..... ***Trileptium*** **Cobb, 1933**

12(3) **A** Stoma narrow, amphids small, body not tapered anteriorly **13**

B Stoma almost absent, amphids small to large, rounded to longitudinal; body tapered anteriorly **(5)**. **(Superfamily Oxystominoidea)** **17**

13(12) **A** Stoma elongate-tubular with parallel walls; three claw-like teeth at anterior end of stoma **(52t)**. **(Family Ironidae)** **14**

B Stoma funnel- or barrel-shaped; teeth, when present, arising from walls of stoma **15**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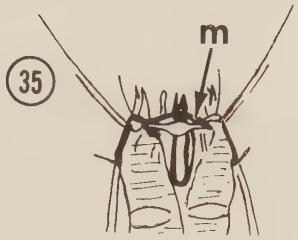
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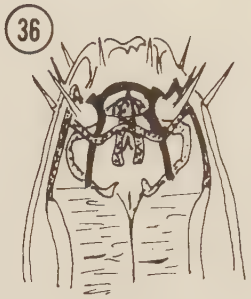
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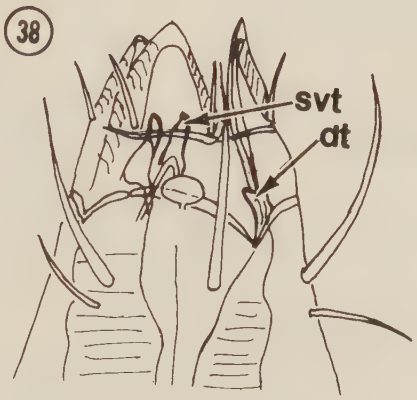
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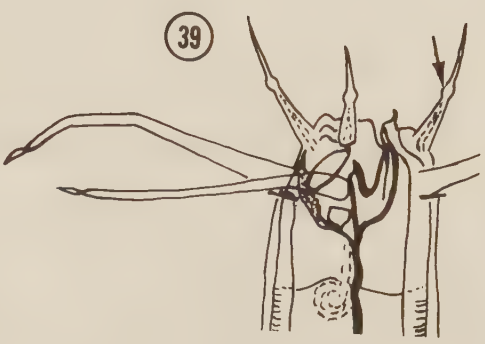
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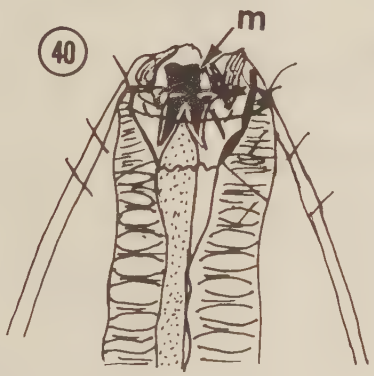
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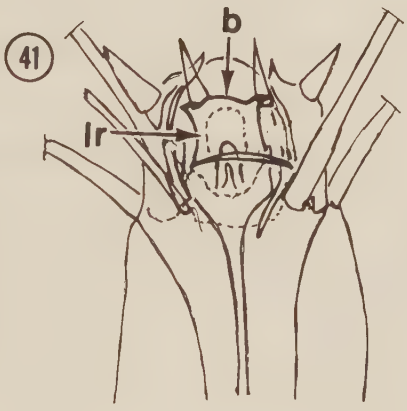
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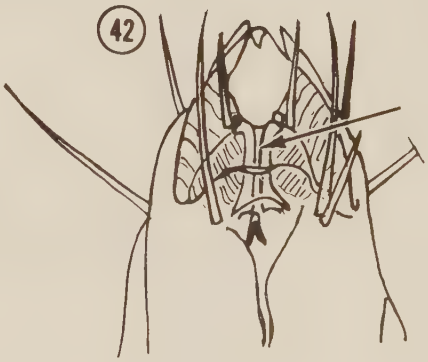
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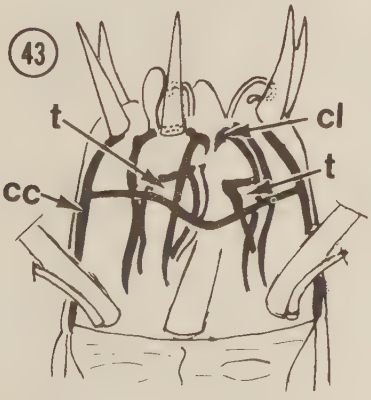
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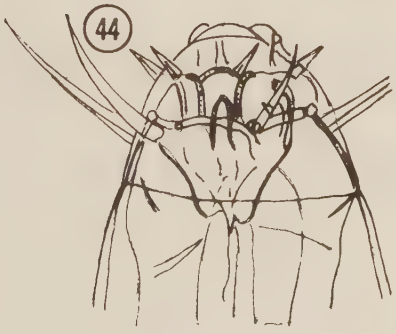
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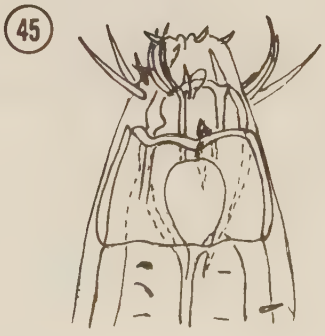
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14(13) **A** Cephalic sensillae papilliform **(53cs)** ..... **Ironinae**

a Esophagus with distinct posterior bulb **(54)** ..... ***Syringolaimus*** **De Man, 1888**

Esophagus without posterior bulb ..... **b**

b(a) Female gonad monodelphic, opisthodelphic ..... ***Trissonchulus*** **Cobb, 1920**

Female gonad didelphic, amphidelphic ..... **c**

c(b) Spinneret present, marine **(55)** ..... ***Dolicholaimus*** **De Man, 1888**

Spinneret absent, freshwater ..... ***Ironus*** **Bastian,1865**

B Cephalic sensillae setiform **(52cs)** ..... **Thalassironinae**

a Cephalic setae long, in two well-separated circles of 6+4 **(56)** ..... ***Ironella*** **Cobb, 1920**

Cephalic setae in single circle of 10 ..... **b**

b(a) Caudal glands and spinneret present ..... **d**

Caudal glands and spinneret absent ..... **c**

c(b) Cephalic setae short **(57)** ..... ***Pheronus*** **Inglis, 1966**

Cephalic setae long **(58)** ..... ***Parironus*** **Micoletzky, 1930**

d(b) Cephalic setae long or short; if long, cervical setae doubled **(52ds)**; spicules short and equal in length ..... ***Thalassironus*** **De Man, 1889**

Cephalic setae long, cervical setae not doubled; spicules unequal in length, one exceedingly long **(59s)** ..... ***Conilia*** **Gerlach, 1956**

15(13) **A** Female genital duct opening (vulva) well separated from anus **16**

B Female genital duct united with rectum forming a cloaca or vulva immediately anterior to anus ..... **Lauratonematidae**

a Cloaca present in females **(60)** ..... ***Lauratonema*** **Gerlach, 1953**

Cloaca absent, vulva **(61v)** immediately anterior to anus **(61an)** ..... ***Lauratonemoides*** **De Coninck, 1965**

16(15) **A** Stoma large, barrel-shaped or prismatic; esophagus muscular, areolated; stoma with large teeth **(62)**. **(Family Prismatolaimidae)** ..... ***Onchulus*** **Cobb, 1920**

B Stoma reduced **(63)**, funnel-shaped or straight; esophageal tissue more or less homogenous; freshwater forms (except one genus). **(Family Tripylidae)** ..... ***Tripyla*** **Bastian, 1865**

17(12) **A** Amphids small, rounded **(64)**; two ovaries; precloacal supplements large, knob-like or absent ..... **Paroxystominidae**

a Supplements large, knob-like **(65)** ..... ***Paroxystomina*** **Micoletzky, 1924**

Supplements absent ..... ***Maldivea*** **Gerlach, 1962**

B Amphids large to very large, of diverse shapes; one or two ovaries; precloacal supplements minute, setose, or absent. **(Family Oxystominidae)** **18**

18(17) **A** Amphids elongate, longitudinally slit **(5a)**; precloacal supplements absent ..... **Halalaiminae**

a Caudal glands absent ..... ***Halalaimoides*** **Cobb, 1933**

b Caudal glands present ..... ***Halalaimus*** **De Man, 1888**

aa Distinct circle of labial setae **(5ls)** present ..... ***Nualaimus*** **Juario, 1974**

Distinct circle of labial setae absent ..... **bb**

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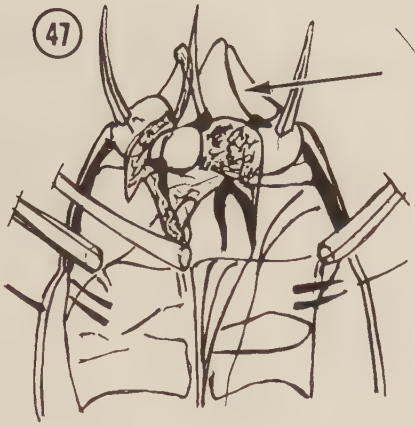
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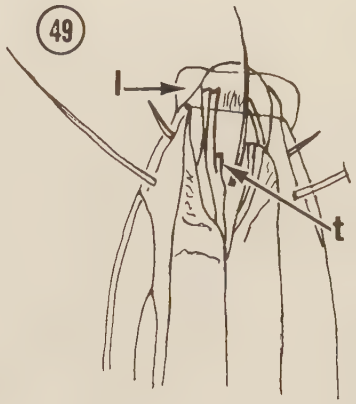
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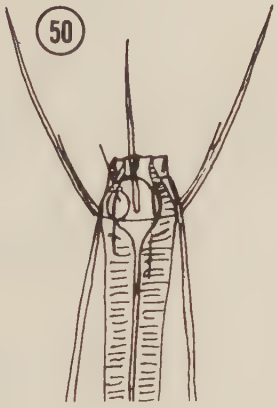
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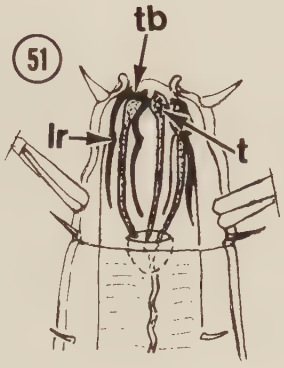
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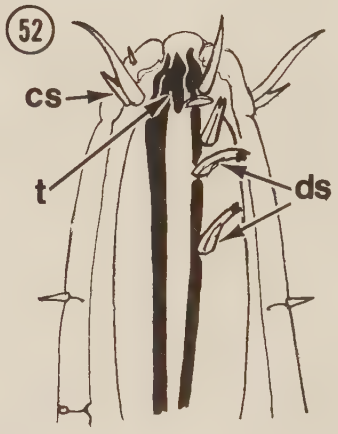
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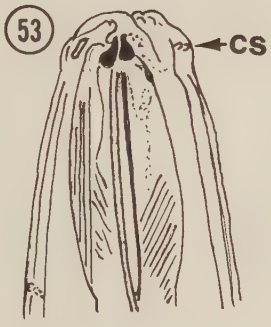
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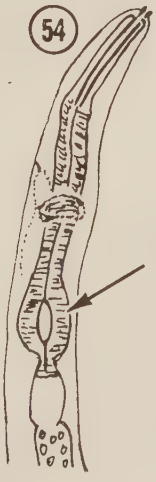
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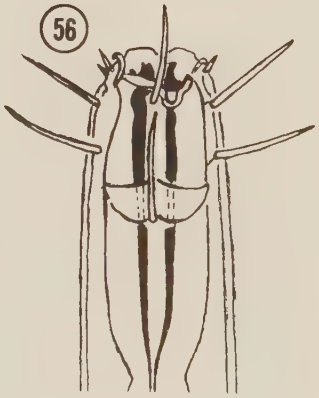
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bb(aa) Cephalic setae in two well-separated circles ..... **cc**

Cephalic setae in two circles close together ..... ***Nuada*** **Southern, 1914 (= *Tycnodora* Cobb, 1920)**

cc(bb) Amphids narrow (width <40% of corresponding diameter) ..... ***Halalaimus*** **De Man, 1888**

Amphids wide (width ≥40% of corresponding diameter) ..... ***Pachydora*** **Wieser, 1953**

B Amphids rounded **(66)**, not longitudinally slit; if present, precloacal supplements setose .... **Oxystomininae**

a Amphids very large, almost circular, orifice narrow; cephalic setae in two circles of six or single circle of 10 or 12 ..... **b**

Amphids never very large; 10 cephalic setae in two circles ..... **c**

b(a) Cephalic setae in two circles of six each, circles close together ..... ***Litinium*** **Cobb, 1920**

Cephalic setae in single circle of 10 or 12 ..... ***Thalassoalaimus*** **De Man, 1893**

c(a) Cephalic setae in two circles close together **(67cs)**; circle of long cervical setae at level of amphids **(67a)** ..... ***Wieseria*** **Gerlach, 1956**

Cephalic setae in two well-separated circles; without circle of long cervical setae at level of amphids **(68cs)** ..... **d**

d(c) Tail short, rounded **(69)** ..... ***Nemanema*** **Cobb, 1920**

Tail long, attenuated **(70)** ..... ***Oxystomina Filipjev, 1921***

19(2) **A** Esophagus may be significantly enlarged posteriorly, occasionally with posterior bulb or multibulbar; sexual dimorphism in stoma present or absent; if present, male stoma reduced; stoma with single large tooth **(71t)** or three unequal teeth **(80t)**, denticles may be present **(80d)**; if so, male supplements may be knob-like, cuticularized. **(Superfamily Enchelidoidea)** **20**

B Esophagus cylindrical or clavate, not significantly enlarged posteriorly, never multibulbar; sexual dimorphism in stoma absent; stoma unarmed or with three teeth **(72)**, denticles may be present (one genus); male supplements papilloid, not cuticularized if present **24**

20(19) **A** Esophagus with a row of moniliform bulbs **(73)** ..... **Bolbellidae**

a Male supplements papilloid; sexual dimorphism in stoma (males reduced) present in some species ..... ***Polygastrophora*** **De Man, 1922**

Male supplements cup-like, large **(74)**; sexual dimorphism in stoma absent ..... ***Bolbellia*** **Gerlach and Riemann, 1974 (= *Belbolla* Andrássy, 1976 = *Bolbella* Cobb, 1920)**

B Esophagus without row of bulbs **21**

21(20) **A** Stoma in both sexes spacious, about as long as wide; one to three teeth present; tooth, if single, originating from base of stoma **(75)**. **(Family Eurystominidae)** **22**

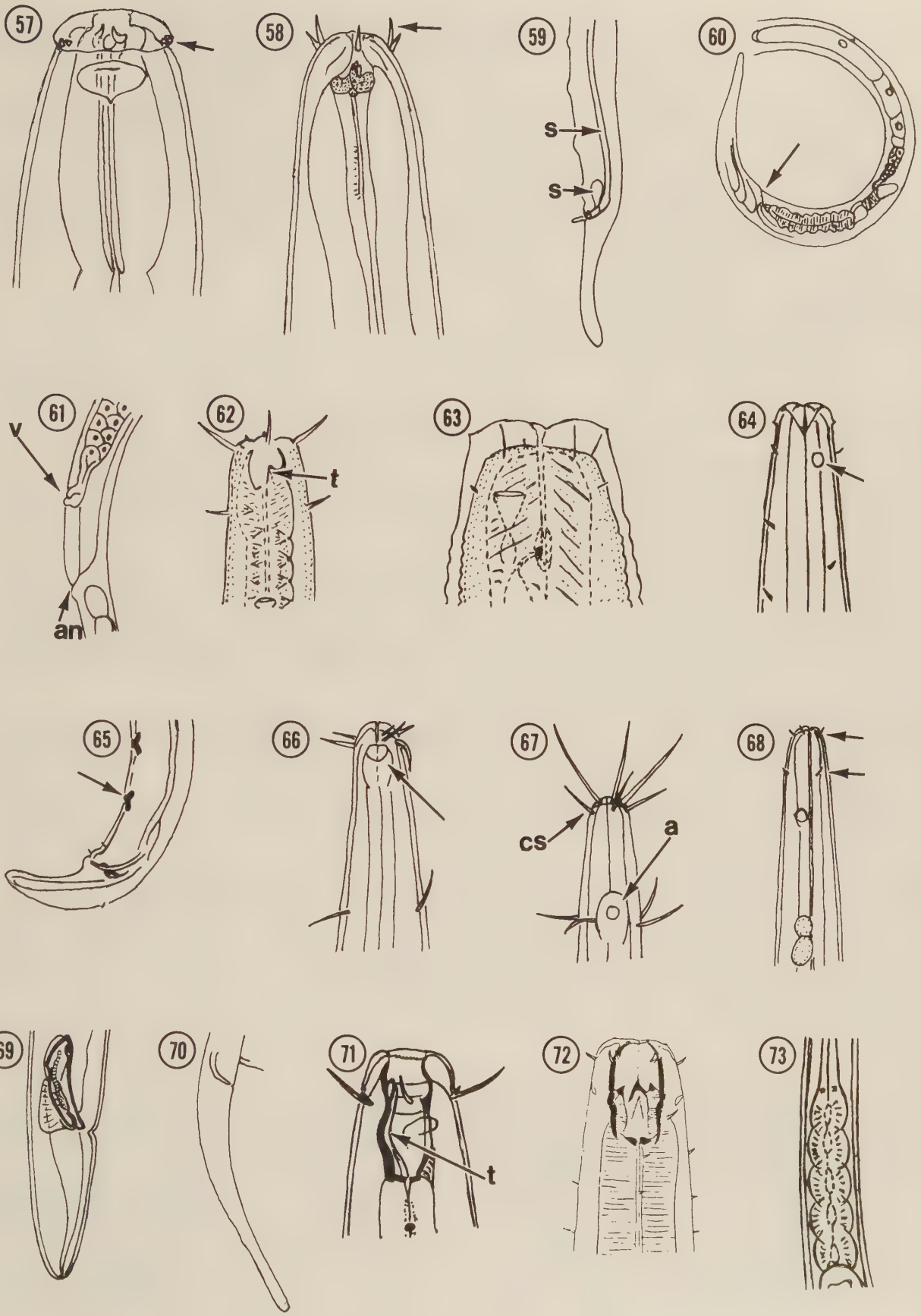
B Stoma of female longer than wide; single tooth lies on wall of stoma **(77t)**; stoma of males rudimentary **(76)**. **(Family Enchelidiidae)** ..... **Enchelidiinae**

a Female stoma narrow, almost cylindrical; solid transverse stomatal rings present giving appearance of more than two chambers **(77c)** ..... **b**

Female stoma broader, divided into two unequal chambers **(78c)** by a transverse band, a ring or row of denticles **(78d)**; other rings, if present, faint and located posteriorly ..... **c**

b(a) Transverse row of denticles in anterior portion of stoma; refractive body absent ..... ***Symplocostomella*** **Micoletzky and Kreis, 1930**

Anterior transverse stomatal ring solid rather than denticular; refractive body present **(77rb)** ..... ***Symplocostoma*** **Bastian, 1865**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c(a) Posterior part of stoma longer than anterior part, asymmetrical; refractive body present **(78rb)** ..... ***Calyptronema*** **Marion, 1870**

Posterior portion of stoma conical, symmetrical; refractive body absent ..... ***Conistomella*** **Stekhoven, 1942**

22(21) **A** Stoma with single, large subventral tooth originating from base of stoma; male precloacal supplements present **(79sup)** **23**

B Stoma with three unequal teeth **(80t)**; male precloacal supplements absent ..... **Thoonchinae**

a Stoma with transverse rows of denticles **(80d)** ..... ***Thoonchus*** **Cobb, 1920**

Stoma without transverse rows of denticles **(81)** ..... ***Ditlevsenella*** **Filijev, 1925**

23(22) **A** Caudal glands and spinneret **(79spn)** present ..... **Eurystomininae**

a Cervical setae extemely long **(82)**, longer than corresponding body diameter ..... ***Ledovitia*** **Filipjev, 1927**

Cervical setae less than corresponding body diameter **(75)** ..... **b**

b(a) Precloacal supplements **(83sup)** and gubernaculum **(83g)** without apophyses ..... ***Gerlachystomina*** **Inglis, 1962**

Precloacal supplements and gubernaculum with apophyses ..... ***Eurystomina*** **Filipjev, 1921**

B Caudal glands and spinneret absent **(84)** ..... **Pareurystomininae**

a Tail conical; precloacal supplements cup-shaped with apophyses **(84ap)** ..... ***Pareurystomina*** **Micoletzky and Kreis, 1930**

Tail flagellate **(85)**; precloacal supplements tubular, without apophyses **(86sup)** ..... ***Batheurystomina*** **Lambshead and Platt, 1979**

24(19) **A** Stoma unarmed or with minute teeth **(87)**. **(Superfamily Pelagonematoidea, Family Pelagonematidae)** **25**

B Stoma armed with one to three large teeth **(1t)**. **(Superfamily Oncholaimoidea, Family Oncholaimidae)** **26**

25(24) **A** Female gonad monodelphic, opisthodelphic; tail filiform. **(Subfamily Curvolaiminae)** ..... ***Curvolaimus*** **Wieser, 1953**

B Female gonads didelphic, amphidelphic; tail not filiform ..... **Pelagonematinae**

a Stoma small, short, cup-shaped, nearly as wide as long ..... ***Bradybucca*** **Stekhoven, 1956** **(= *Anoncholaimus* Stekhoven, 1950)**

Stoma large, longer than wide ..... **b**

b(a) Head with three lips; stoma cylindrical **(88)**; males with bursa ..... ***Anoplostoma*** **Bütschli, 1874**

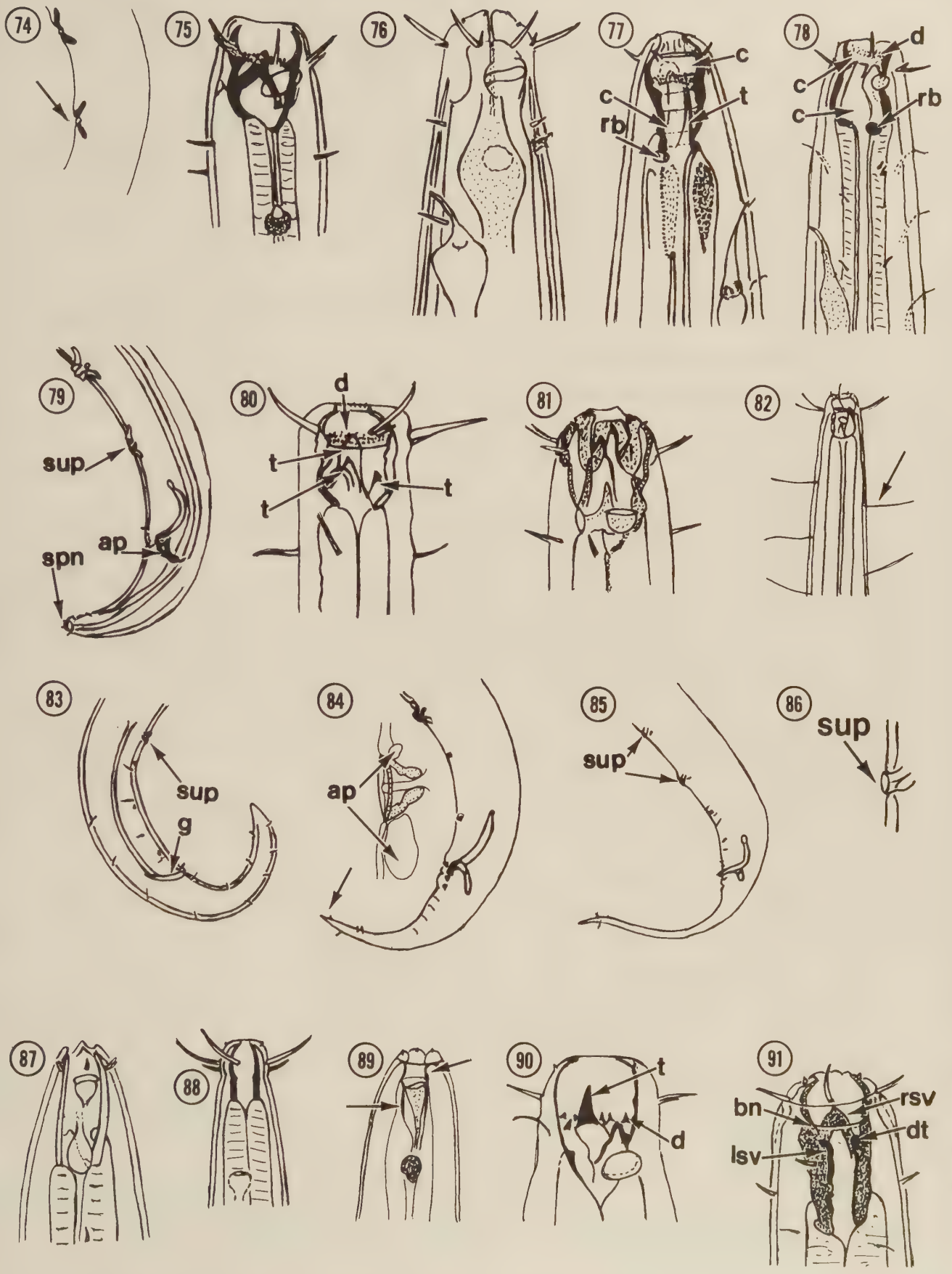
Head with six lips; stoma cup-shaped or with curved or bipartite walls; males without bursa ..... **c**

c(b) Stoma in two tandem parts **(89)** ..... ***Illium*** **Cobb, 1920** **(= *Pseudopelagonema* Kreis, 1932)**

Stoma not in two tandem parts ..... **d**

d(c) Esophagus with posterior bulb ..... ***Pelagonemella*** **Kreis, 1932**

Esophagus without posterior bulb ..... ***Pelagonema*** **Cobb, 1894**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26(24) A Stoma with one large tooth **(90t)** and numerous smaller, well-developed denticles **(90d)**. **(Subfamily Octonchinae)** ..... ***Octonchus*** **Clark, 1961**
(= *Polydontus* Schulz, 1932)

B Stoma with one to three well-developed teeth, denticles absent **27**

27(26) A Stoma with three teeth; right subventral very large **(91rsv)**, left subventral **(91lsv)** and dorsal **(91dt)** reduced or even greatly reduced; males may have copulatory bursa; gubernaculum absent; demanian system **(92a,b)** present or absent; if present, without exit pores **(92a)** ..... **Oncholaimellinae**

a Females with one ovary; if present, bursa of males supported by long, knobbed papillae **(93)** ..... **b**

Females with two ovaries; if present, bursa of males not supported by long, knobbed papillae; circumcloacal setae present ..... **c**

b(a) Stoma large, not cup-shaped; bursa in males supported by long, knobbed papillae **(93)** ..... ***Oncholaimelloides*** **Timm, 1969**

Stoma small, cup-shaped **(94st)**; bursa absent ..... ***Krampia*** **Ditlevsen, 1921**

c(a) Cuticle with distinct annules **(95)**, longitudinal striations distinct or indistinct ..... ***Oncholaimoides*** **Chitwood, 1937**

Cuticle without distinct transverse annulations or longitudinal striations ..... **d**

d(c) Right subventral tooth large, almost fills stomatal cavity **(91rsv)**; left subventral **(91lsv)** and dorsal teeth **(91dt)** small, not elongate; bursa present or absent ..... **e**

Right subventral tooth not as large as above **(96rsv)**; left subventral **(96lsv)** and dorsal teeth **(96dt)** reduced but elongate, distinct; small bursa present **(97)** or absent ..... ***Viscosia*** **De Man, 1890**

e(d) Right subventral tooth heavily cuticularized; stoma divided transversely by cuticularized band **(91bn)**; spicules moderate to very long; bursa present or absent ..... ***Oncholaimellus*** **De Man, 1890**

Right subventral tooth **(98rsv)** not as heavily cuticularized; dorsal **(98dt)** and left subventral **(98lsv)** teeth greatly reduced; stoma not divided transversely by cuticularized band; bursa absent; circumcloacal setae present; spicules short, about one anal diameter long, straight ..... ***Mononcholaimus*** **Kreis, 1924**

B Stoma with three teeth, equal or unequal in size; if subventrals unequal, left largest; right subventral and dorsal never greatly reduced; bursa absent; gubernaculum present or absent; demanian system present **(92a,b)** or absent, exit pores present **(92b,p)** or absent ..... **Oncholaiminae**

a Subcuticular trabeculae present **(99)** ..... ***Prooncholaimus*** **Micoletzky, 1924**

Subcuticular trabeculae absent ..... **b**

b(a) Females with two ovaries ..... **c**

Females with one ovary ..... **h**

c(b) Demanian system absent ..... **d**

Demanian system present ..... **e**

d(c) Tail short **(100)**; gubernaculum present ..... ***Pontonema*** **Leidy, 1885**

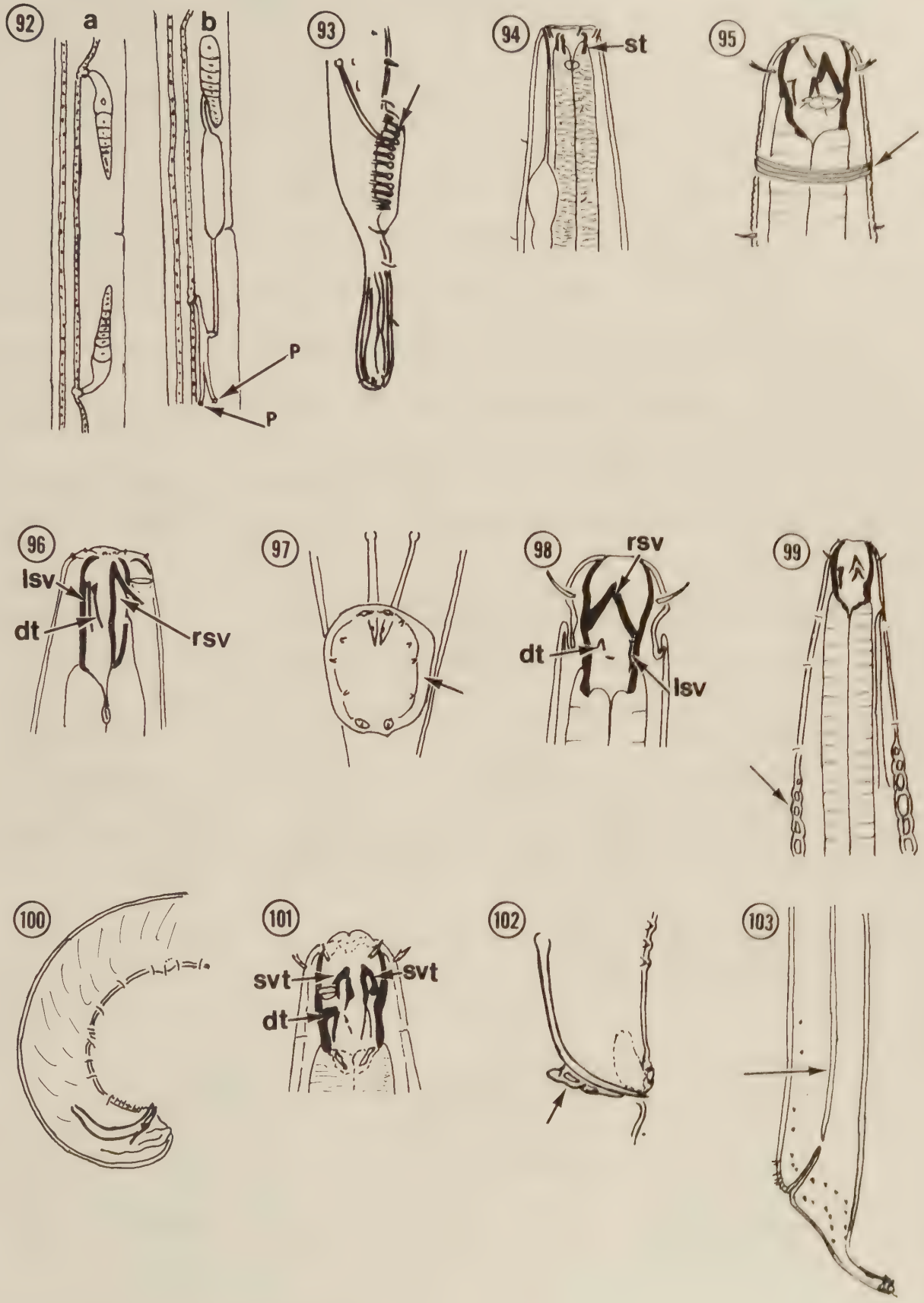
Tail long, filiform; gubernaculum absent ..... ***Filoncholaimus*** **Filipjev, 1927**

e(c) Demanian system exit pore single, at level of vulva; subventral teeth equal **(101svt)**, larger and anterior to dorsal **(101dt)**; gubernaculum present **(102)** ..... ***Meyersia*** **Hopper, 1967**

Demanian system exit pores two or more **(92b,p)**, posterior to vulva; teeth variable; gubernaculum present or absent ..... **f**

f(e) Subventral teeth equal, smaller than dorsal; spicules very long and thin **(103)**; gubernaculum absent ..... ***Metoncholaimoides*** **Wieser, 1953**

Subventral teeth equal or unequal, larger or equal to dorsal; gubernaculum present ..... **g**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g(f) Stoma about three times as long as wide; gubernaculum small ..... ***Kreisoncholaimus*** **Rachor, 1969**

Stoma about two times as long as wide **(104)**; gubernaculum larger **(105)** ..... ***Adoncholaimus*** **Filipjev, 1918**

h(b) Demanian system absent; spicules short; gubernaculum absent **(106)** ..... ***Pseudoncholaimus*** **Kreis, 1932**

Demanian system present; spicules variable; gubernaculum present or absent ..... **i**

i(h) Spicules short; gubernaculum absent ..... **j**

Spicules moderate to very long; gubernaculum present or absent ..... **k**

j(i) Subventral teeth equal **(107svt)** or unequal; males with well-developed, fleshy or papilloid precloacal organ **(108)**; demanian system with exit pores **(92b,p)** ..... ***Oncholaimium*** **Cobb, 1930**

Subventral teeth equal or unequal; males without well-developed precloacal organ; demanian system without exit pores ..... ***Oncholaimus*** **Dujardin, 1845**

k(i) Subventral teeth equal and larger than dorsal; spicules moderate to long; gubernaculum present or absent ..... **l**

Subventral teeth unequal; spicules moderate to greatly elongate (setaceous) **(109)**; gubernaculum present or absent ..... ***Metoncholaimus*** **Filipjev, 1918**

l(k) Spicules medium length; gubernaculum small **(110)** ..... ***Metaparoncholaimus*** **De Coninck and Stekhoven, 1933**

Spicules long, slender; gubernaculum large **(111)** ..... ***Wiesoncholaimus*** **Inglis, 1966**

28(1) **A** Stoma with two chambers **(112c)**; teeth present **(112t)** or absent; gubernaculum **(113g)** very large, equal to or larger than spicules **(113s)**; cephalic setae in single circle of 10 setae ..... **Tripyloididae**

a Cephalic setae short, thick, distinctly segmented; stoma funnel-shaped **(112c)**; teeth present or absent ..... **b**

Cephalic setae long, thin, indistinctly segmented; anterior portion of stoma large, globular **(114)**; teeth present or absent ..... ***Bathylaimus*** **Cobb, 1893**

b(a) Posterior chamber of stoma with teeth **(112t)** ..... ***Tripyloides*** **De Man, 1886**

Posterior chamber of stoma without teeth ..... ***Paratripyloides*** **Stekhoven, 1950**

B Stoma not divided into two chambers **(115)**; teeth absent; gubernaculum smaller than spicules; cephalic setae in single circle of six or in two circles of 6+4. **(Family Trefusiidae)** **29**

29(28) **A** Stoma large, barrel-shaped; lips large, with three large circular structures **(116cir)**; cephalic setae very short **(116cs)**. **(Subfamily Halanonchinae)** ..... ***Halanonchus*** **Cobb, 1920**

B Stoma narrow, not barrel-shaped **(115st)**; lips small, without circular structures; cephalic setae longer **(115cs)** ..... **Trefusiinae**

a Amphids circular; gubernaculum present ..... **b**

Amphids oblong with posteriorly directed pouch **(115a)**; gubernaculum absent ..... **c**

b(a) Amphids closed circles **(117)**; females with one ovary ..... ***Rhabdocoma*** **Cobb, 1920**

Amphids open circles **(118)**; females with two ovaries ..... ***Cytolaimium*** **Cobb, 1920**

c(a) Male with two testes ..... ***Trefusia*** **De Man, 1893**

Male with one testis ..... ***Trefusialaimus*** **Riemann, 1974**

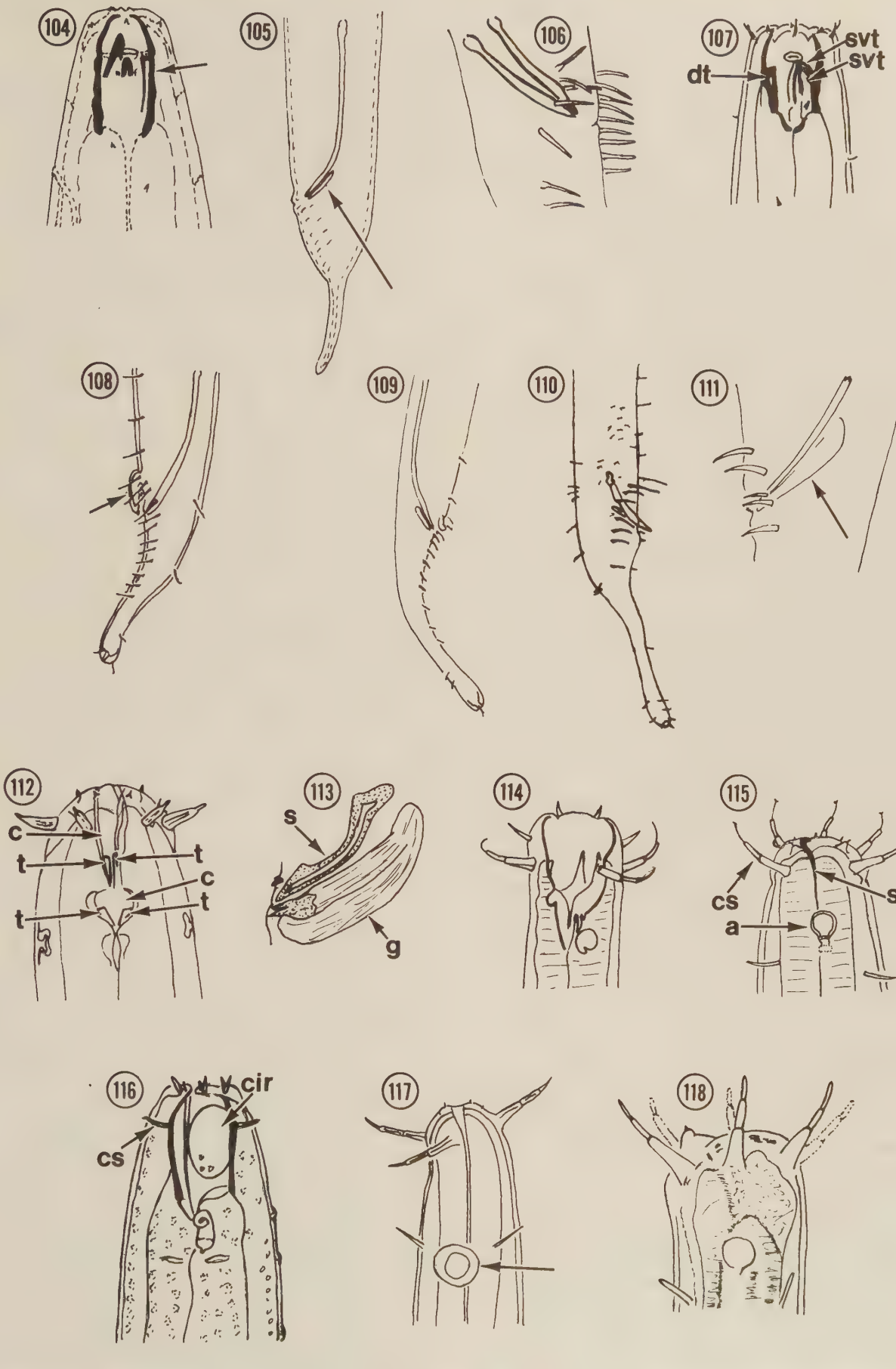
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Illustration sources

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1	Wieser 1959, fig. 26d
2	Keppner 1986, fig. 35, p. 333
3	Wieser 1953, fig. 35c, p. 69
4	Andrássy 1968, fig. c, p. 213
5	Wieser and Hopper 1967, fig. 3a, p. 309
6	Original drawing
7	Bongers 1983, fig. 10A, p. 827
8	Wieser 1954, fig. 2b, p. 176
9	Gerlach 1956b, fig. d, tafel 26
10	Inglis 1964, fig. 134, p. 361
11	Micoletzky 1930, fig. 5c, p. 268
12	Micoletzky 1930, fig. 4a, p. 262
13	Wieser 1953, fig. 3d, p. 18
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15	Platonova and Gal'tsova 1976, fig. 53, p. 145
16	Inglis 1964, fig. 2, p. 274
17	Vitiello 1970, fig. 2a, p. 141
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19	Vitiello 1970, fig. 3b, p. 141
20	Bongers 1984, fig. 2B, p. 19
21	Bongers 1983, fig. 15B, p. 835
22	Inglis 1966, fig. 1, p. 84
23	Schuurmans-Stekhoven 1935, fig. 72A, p. 11
24	Inglis 1964, fig. 141, p. 362
25	Hope 1967, fig. 3D, p. 9
26	Platt and Warwick 1983, fig. 83c, p. 187
27	Inglis 1964, fig. 104, p. 357
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29	Inglis 1964, fig. 38, p. 346
30	Steiner 1921, fig. 6a, tafel 12
31	Inglis 1964, fig. 42, p. 346
32	Wieser 1953, fig. 29b, p. 57
33	Vitiello 1970, fig. 31e, p. 179
34	Wieser and Hopper 1967, fig. 10a, p. 312
35	Wieser 1959, fig. 35c, p. 69
36	Bresslau and Schuurmans-Stekhoven 1940, fig. 17C, tafel IV
37	Kreis 1928, fig. 13b, p. 195
38	Gerlach 1956b, fig. i, tafel 28
39	Warwick and Platt 1973, fig. 11a, p. 152
40	Wieser 1953, fig. 37a, p. 71
41	Inglis 1966, fig. 10, p. 86
42	Inglis 1966, fig. 13, p. 90
43	Original drawing
44	Inglis 1966, fig. 13, p. 90
45	Vitiello 1970, fig. 34a, p. 184
46	Inglis 1964, fig. 94, p. 355
47	Wieser and Hopper 1967, fig. 13a, p. 313
48	Wieser 1953, fig. 52b, p. 93
49	Wieser 1959, fig. 2a, plate 1
50	Wieser 1953, fig. 54a, p. 93
51	Original drawing
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53	Van der Heiden 1974, fig. 3A, p. 426
54	Chitwood 1951, fig. 91, p. 647
55	Wieser 1953, fig. 57d, p. 97
56	Original drawing
57	Inglis 1966, fig. 17, p. 94
58	Boucher 1971, fig. 1A, p. 976
59	Gerlach 1956a, fig. 51, p. 38
60	Gerlach 1953, fig. 5, p. 46
61	Gerlach 1956b, fig. b, tafel 26
62	Andrássy 1964, fig. a, p. 31
63	Brzeski 1964, fig. 1, p. 160
64	Wieser 1953, fig. 22a, p. 45
65	Wieser 1953, fig. 22b, p. 45
66	Gerlach 1962, fig. i, tafel 4
67	Gerlach 1956b, fig. i, tafel 26
68	Platt and Warwick 1983, fig. 88A, p. 199
69	Platt and Warwick 1983, fig. 88E, p. 199
70	Gerlach 1962, fig. f, tafel 4
71	Wieser and Hopper 1967, fig. 27A, p. 321
72	Schuurmans-Stekhoven and Adam 1931, fig. 3, plate 5
73	Timm 1952, fig. 25, p. 17
74	Wieser 1953, fig. 83d, p. 137
75	Timm 1961, fig. 16A, p. 41
76	Jensen 1986, fig. 6a, p. 98
77	Micoletzky 1930, fig. 17, p. 310
78	Hopper and Meyers 1967, fig. 9, p. 492
79	Wieser 1959, fig. 87d, p. 141
80	Gerlach 1954a, fig. 3A, tafel 89
81	Riemann 1966, fig. 52f, p. 191
82	Wieser 1953, fig. 83b, p. 137
83	Gerlach 1954b, fig. 1b, p. 98
84	Original drawing
85	Lambshead and Platt 1979, fig. 2c, p. 375
86	Lambshead and Platt 1979, fig. 2f, p. 375
87	Vitiello 1970, fig. 46a, p. 198
88	Original drawing
89	Wieser and Hopper 1967, fig. 25a, p. 320
90	DeConinck 1965, fig. 472, p. 661
91	Original drawing
92	Hope 1974, fig. 11, p. 417
93	Murphy 1966, fig. 1d, p. 30
94	Bresslau and Schuurmans-Stekhoven 1940, fig. 21A, tafel 5
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96	Wieser and Hopper 1967, fig. 23a, p. 319
97	Wieser and Hopper 1967, fig. 22f, p. 319
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100	Hopper and Meyers 1967, fig. 8, p. 492
101	Hopper 1967, fig. 12, p. 148
102	Original drawing
103	Wieser 1959, fig. 74a, p. 125
104	Hopper 1969, fig. 1, p. 677
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106	Belogurov et al. 1972, fig. 1, p. 1451
107	Wieser and Hopper 1967, fig. 16a, p. 315
108	Wieser and Hopper 1967, fig. 15c, p. 315
109	Original drawing
110	Mawson 1958, fig. 38c, p. 352
111	Inglis 1966, fig. 34, p. 99
112	Gerlach 1965, fig. 31a, tafel 155
113	Original drawing
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115	Keppner 1986, fig. 29, p. 330
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